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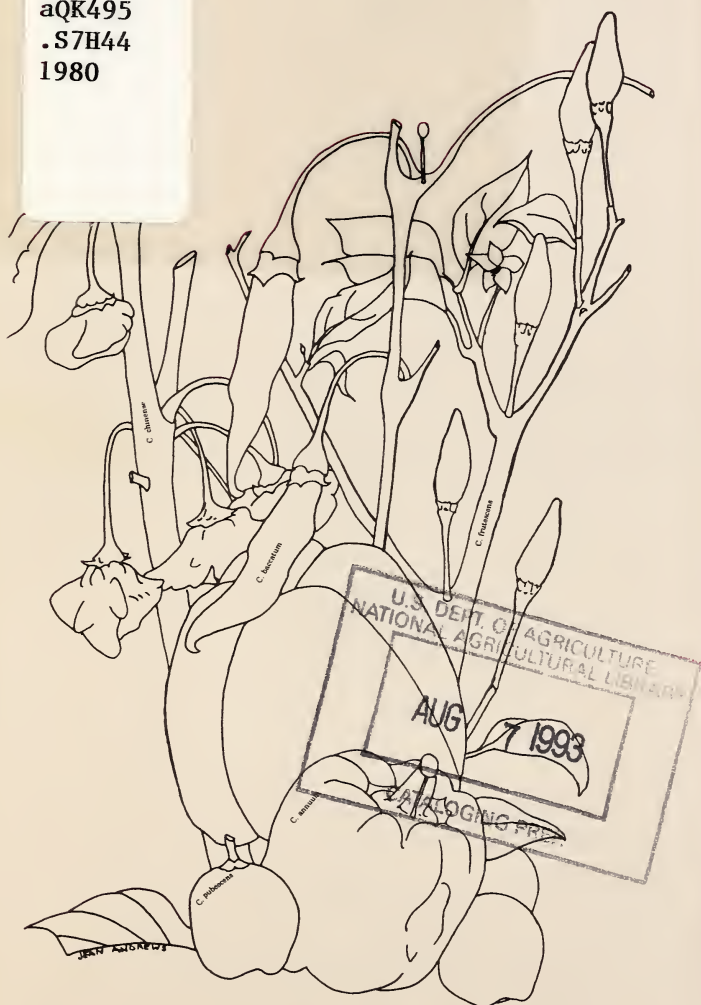
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Peppers

of the
Americas

by Dr. Charles B. Heiser, Jr.

Reserve
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1980



at the National Arboretum

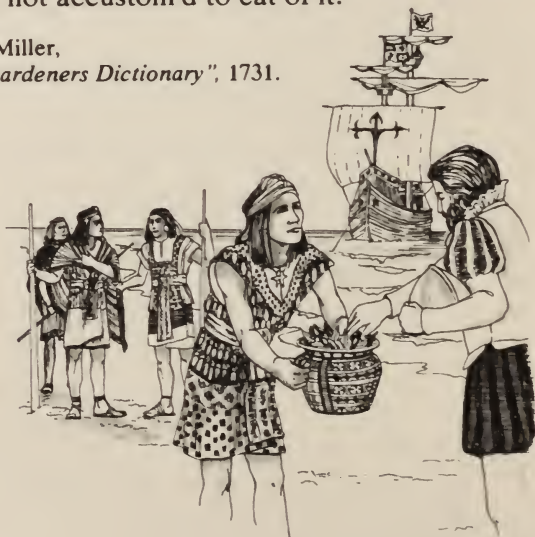
Peppers (Capsicum)

"Among the vegetables that produce the fruit on its branches, the *ají*, after maize, holds the first place as the plant most common and of greatest esteem among the Indians... among the species that God gave to the natives of the New World, it is so accepted by all of the nations that no one is found who does not make use of it and hold it in much regard; and today not only the Indians esteem it but also the resident Spaniards of these Indies, and even those who have not come to these lands, since it now yields with no less abundance in Spain than in America, and its use is no less well received than that of the pepper of Oriental India... still some Spaniards who are not accustomed to it, are not able to eat it without pouring forth tears such is the strength of the *ají*."

Translation from the Spanish of Padre Bernabé Cobo
"*Historia del Nuevo Mundo*", 1890-93 written about 1653.

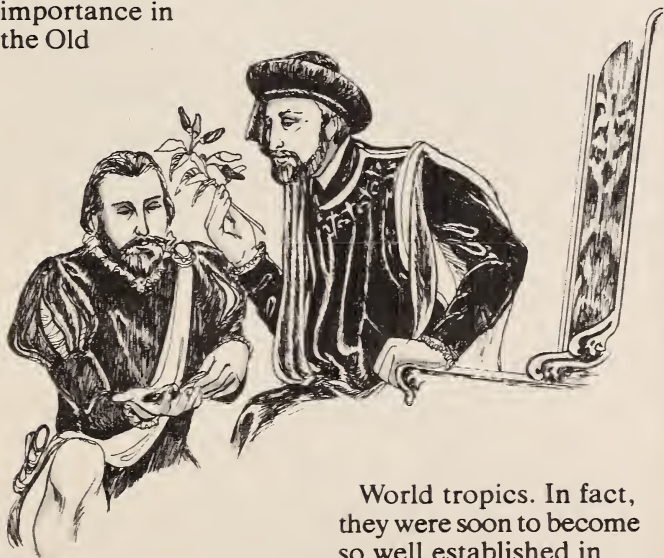
"The fruit of these Plants, tho' at present of no great use in *England*, yet affords one of the wholesomest Pickles in the World, if they are gather'd young before the Skins grow tough. The Inhabitants of the *West-Indies* eat great quantities of this Fruit raw, not only while it is green, but also when it is fully ripe; at which time it is so very acrid as to cause an extraordinary great Pain in the mouth and Throat of such Persons as are not accusom'd to eat of it."

Philip Miller,
"*The Gardeners Dictionary*", 1731.



In 1493 Dr. Chauca, the physician on Columbus' voyage, wrote that the Indians used a spice called "agi" as a seasoning. This is the first recorded notice of a capsicum pepper in the Old World. It was, of course, a search for spices, such as black pepper, known at that time only from the Far East, that helped to stimulate the great ocean voyages from Europe in the fifteenth and sixteenth centuries. Although the spices that were sought were not to be found in the New World, other plants were. The plants introduced to Europe at this time were to become many times more valuable than all the gold carried back to Spain from the Americas.

Following their introduction to Europe, the capsicum peppers, unlike their cousins, the Irish potato and the tomato, were readily accepted, particularly as a condiment and as an ornamental. They were shortly to reach other parts of the world and to become of great importance in the Old



World tropics. In fact, they were soon to become so well established in India that later some botanists were inclined to regard them as native plants. Today the capsicum peppers rank second in importance only to black peppers among the spice plants of the world, and, in addition, are an important vegetable, rich in vitamin C.

As the Americas became known, the Europeans were to learn that peppers of many different kinds were grown from Mexico to Argentina and Chile. Peppers were one of the most preferred foods, and in many places scarcely a dish was served that was not flavored with them. Not only were the fruits used, but in some places the leaves were eaten as well. Bags of peppers were part of the tribute that conquered tribes were required to pay to the Aztecs. After his visit to Latin America, Alexander von Humboldt wrote that peppers were as indispensable to the natives as salt was to the European.

In addition to being eaten, peppers played a role in the religious observations of many Indians, and the plants were also valued as medicine. After the peppers reached Europe, the herbalists found other medicinal uses for them, and to this day they have continued to play a role in medicine. Their present medicinal use, however, is a minor one. In the United States peppers are used chiefly as a counter irritant in throat and chest ailments.

The Indians had many names for peppers: *Chili* (sometimes spelled chilli or chile) in Mexico, *uchu* in Peru, *ají* (*agí* or *axí*) in the West Indies and in northern South America were among the most widely employed. It is perhaps unfortunate that one of these names was not adopted in Europe, for the name pepper for the American plants has long been a source of confusion. The true pepper from which black and white pepper



is made comes from a vine native to the oriental tropics and probably was first brought into cultivation in India. Scientifically known as *Piper nigrum*, it belongs to the botanical family Piperaceae and is quite unrelated to the peppers of the New World.

The American peppers were placed in the genus *Capsicum* by Linnaeus, and there is disagreement as to the exact meaning of the name, some thinking it comes from *capsa*, Latin for box, referring to the box-like fruits, whereas others hold that it is from the Greek *kapto*, meaning "to bite," in reference to the pungency. *Capsicum* belongs to the Solanaceae or nightshade family. In addition to the tomato and potato, this family includes other familiar plants such as eggplant, petunia and tobacco.

There are some 20 wild species in the genus, mostly confined to South America, and four or five cultivated or domesticated species. Although sweet or non-pungent forms are known in several species, the vast majority of the peppers are "hot," varying from mildly pungent to those that produce a severe burning sensation in the mouth and on other sensitive parts of the skin. Although today in the United States and in many other parts of the temperate zone, sweet peppers are preferred, it was probably the pungency of peppers that originally drew man's attention to them, and pungent forms are still the dominant forms in most of the world. Pungency in *Capsicum* is due to capsaicin, a phenolic compound with a structure similar to that of vanillin. Capsaicin is found mostly in the region of the seed attachment, the placenta. Its presence is controlled by a single dominant gene, and those forms lacking the gene are sweet. Other genes influence the degree of pungency, and environmental factors also seem to play a role.

Why people become so attached to the extremely pungent peppers is not known with certainty, but



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several reasons have been pointed out that the diet of most American Indians was rather bland—maize, beans, squash, potatoes and manioc being the principal foods—and that perhaps peppers became widely accepted because they added both variety and spice. Some of the early Spanish writers as well as more recent ones have claimed that peppers not only stimulate the appetite but aid in digestion as well. Others have mentioned

that hot peppers induce perspiration and hence would have a cooling effect which could account for their great use in hot climates; but this, of course, would not explain their popularity in such places as Mexico City and Cuzco where it is seldom hot. Still others have thought that peppers became widely used because they could control or eliminate intestinal parasites, so common in the tropics; no scientific evidence is available, however, that confirms this.



Exactly how many species of domesticated peppers should be recognized has been the subject of controversy. In the last century many species of cultivated peppers were described, but in the early part of this century, Liberty Hyde Bailey, dean of American horticulture, concluded that there was but a single species. Current studies both in the United States and Europe, however, indicate that there are four or five distinct species, and that these species were domesticated in various parts of the Americas from different wild species.

1. The best known and most widely cultivated species today is *Capsicum annuum*, the species that deserves the name chili. The epithet *annuum*, of course, means annual and although these peppers are usually

grown as annuals in the temperate zones, they are perennials in the tropics. This species includes the common garden sweet pepper, sometimes called bell peppers or mangoes, of which the old cultivar, 'California Wonder,' is still one of the best known. Red pepper, chili powder, paprika, and pimiento are all obtained from this species. Most of the peppers grown as ornamentals for their colorful fruits, frequently as potted plants, such as 'Floral Gem' also belong to this species.



Nowhere is this species more appreciated than in its homeland of Mexico. A visit to a market in most any part of that country will reveal numerous cultivars with names such as 'Ancho,' 'Mulato,' 'Poblando,' 'Serrano,' 'Jalapeño,' and the fiery little *chiltepins*, no larger than a pea. The last named comes from a wild plant, *Capsicum annuum* var. *glabriusculum*, which is probably similar to the progenitor of all the cultivated forms. The archaeological record reveals that the Mexicans were using peppers, probably similar to the chiltepin, as early as 7000 BC. Exactly when the pepper was brought into cultivation is not known, but by the time the Spanish arrived many varieties were in cultivation. Near the end of the sixteenth century, King Philip II of Spain sent Francisco Hernández to Mexico to collect information on the plants, animals and minerals, and Hernández has left us detailed descriptions of many of the peppers used by the Mexicans of that time.

Although North Americans would consider most Mexican peppers as extremely pungent, the Mexicans recognize different degrees of pungency and differences in flavor as well. A special variety is often used to prepare a particular dish, and several varieties may be used in the preparation of

saucers, such as *mole*. The increase in the number of Latin Americans in the United States and the growing popularity of Mexican foods are making Mexican peppers more and more available in markets in the United States.

2. Common in lowland Latin America as a weed and occasionally as a cultivated plant, *Capsicum frutescens* is widely used to make sauces. It is one of the most popular peppers in Brazil where it is known as *malagueta*. This species usually has a greenish or yellowish corolla and may have two fruits at a node in contrast to *Capsicum annuum* which usually has a milky white corolla and bears the fruits singly. Only a single cultivar, 'Tabasco,' is grown in the United States. The history of this variety is better known than that of most peppers that reached the United States in past centuries.



An American returning from the Mexican War of 1846-48 brought seeds with him which he gave to Edmund McIlhenny, a banker and naturalist of note, who grew them at Avery Island, Louisiana. McIlhenny later sent seeds of it to the botanist E. Lewis Sturtevant and plants grown from them served as the basis for the description of 'Tabasco.' This variety is used to make the sauce, sold under the trademark "Tabasco," which is widely known not only in the United States but in other parts of the world as well.

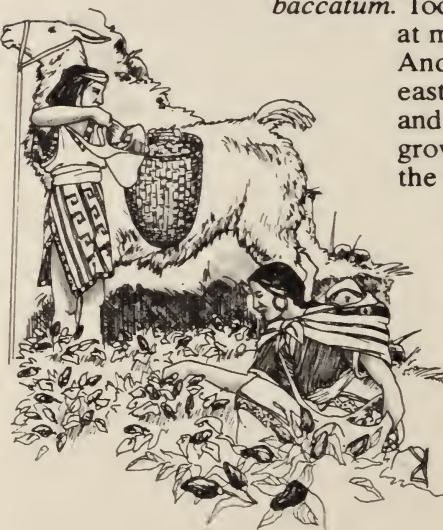
3. Why *Capsicum chinense*—"Chinese pepper"—was so named is not known, for even at the time it was first described it was recognized as coming from the Americas. This species is very closely related to the former species; in fact, the two may constitute a

single species. The only characteristic that generally separates them is the ring-like constriction at the base of the calyx in *Capsicum chinense*. It is widespread in northern South America, southern Central America and the West Indies. It is the most commonly cultivated species in the Amazon basin where it exhibits a myriad of fruit forms. Domestication probably occurred in South America where weed forms are known to occur. It is also now in cultivation in Africa. Some of the most pungent peppers are reputed to be of this species.



4. *Capsicum baccatum* is distinguished from the other cultivated species by tan or golden spots on the corolla. It originated in South America from the wild variety, *Capsicum baccatum* var. *baccatum*. Today it is widely grown

at mid altitudes in the Andes as well as in eastern South America, and is only very sparingly grown in other parts of the world. This species has been found in archaeological deposits in coastal Peru dated at around 2500 BC. This pepper and the next were among the favorite foods in the land of the Incas.



5. The last domesticated species, *Capsicum pubescens*, called *rocoto* in the Andes, is readily set apart from the others by its somewhat wrinkled and hairy leaves, violet corollas, the rather thick flesh of the fruit, and the dark colored seeds. It is adapted to highlands, growing at altitudes of 11,000 feet in the Andes. In addition to its occurrence in the Andean countries it is also cultivated sparingly at high elevations in Central America and Mexico, where it is often known as *chili manzana*. Although the wild ancestor of this species has not been found, it appears most likely that domestication occurred in South America and that it was introduced to Central America by the Spanish.

